CLINICAL PATHWAY ON THE IDENTIFICATION AND TESTING FOR SUSPECTED MEASLES IN CCHCS AMBULATORY CLINIC SITES WHEN NO ACTIVE COMMUNITY SPREAD

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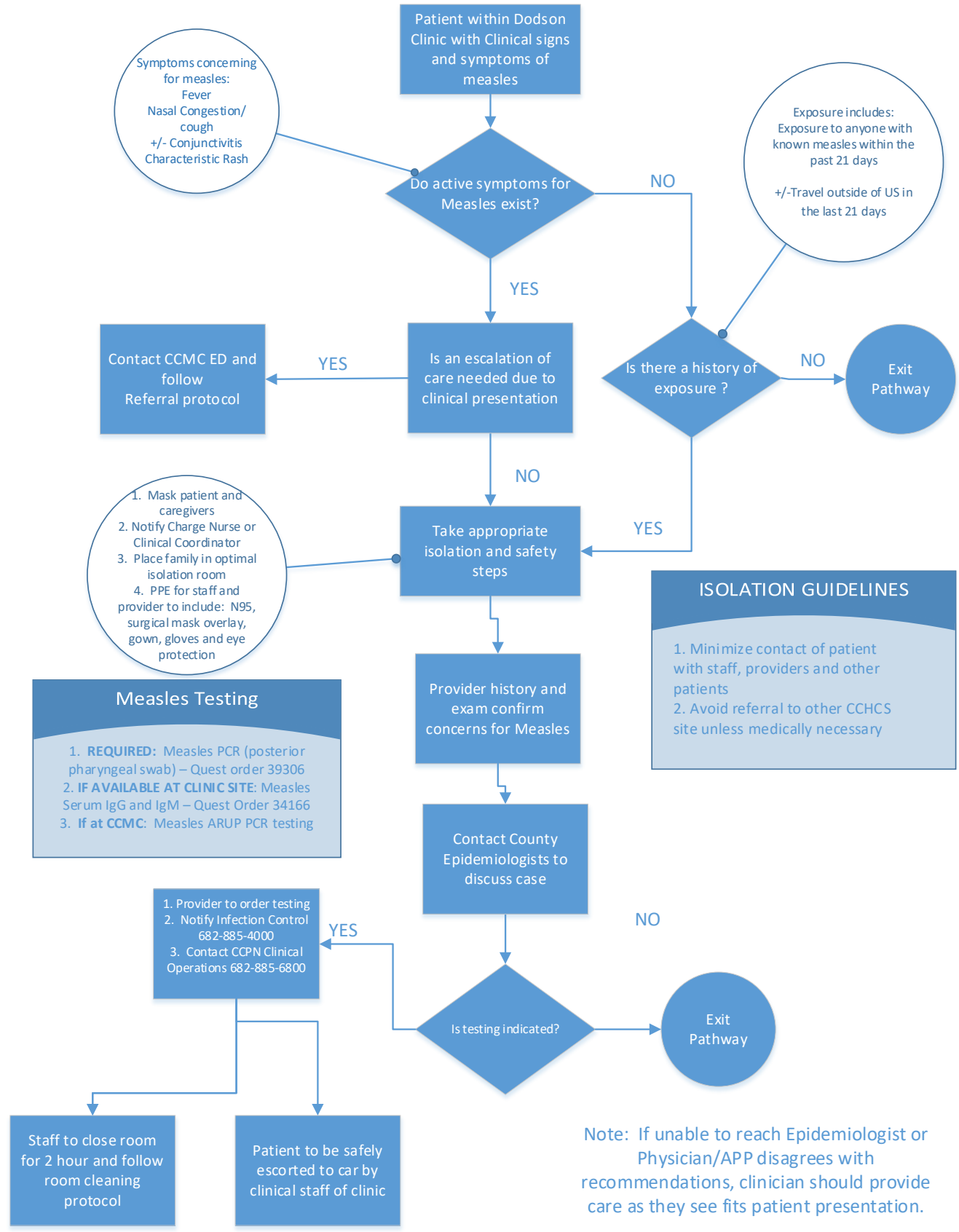
CLINICAL PATHWAY ON THE IDENTIFICATION AND TESTING FOR SUSPECTED MEASLES IN CCHCS AMBULATORY CLINIC SITES WHEN NO ACTIVE COMMUNITY SPREAD



Note: If unable to reach Epidemiologist or Physician/APP disagrees with recommendations, clinician should provide care as they see fits patient presentation.

CLINICAL PATHWAY ON THE IDENTIFICATION AND TESTING FOR SUSPECTED MEASLES IN CCHCS AMBULATORY CLINIC SITES WHEN NO ACTIVE COMMUNITY SPREAD

I. Inclusion Criteria

a. Clinical Picture suspicious for Measles – see detail in Background Section
    i. Fever
    ii. Cough and Congestion
    iii. +/- Conjunctivitis
    iv. Characteristic Rash
b. Exposure
    i. Exposure to known measles within the past 21 days or individuals with the above symptoms
    ii. Travel outside of US in the last 21 days with known exposure to measles or to individuals with the above symptoms

II. Goals/Metrics to be measured annually

a. Number of encounters where measles testing was completed
b. Number of unnecessary ED referrals for measles concerns or actual disease
c. Time to notification of family of positive or negative results
d. Number of sites visited within contagious period for anyone ultimately diagnosed with measles
e. Turnaround times of completed measles PCR tests

III. Background

a. Measles symptoms and clinical course
    i. Symptoms will typically appear 7 to 14 days after exposure but as late as 21 days
    ii. Initial symptoms in first 1-3 days
        1. Fever sometimes high to 104
        2. Cough and coryza (profuse runny nose)
        3. Red watery eyes or conjunctivitis
        4. Clinically ill appearing
    iii. 2 -3 days after symptoms – Koplik Spots
        1. Pathognomonic feature of Measles
        2. Can be identified before the onset of the rash
        3. Blue white spots with a red halo on the buccal mucosa opposite the premolar teeth

iv. 3 – 5 days after symptoms begin – Measles Rash
   1. Begins on face at hairline and spreads downward – ***DRIPPING RASH***
   2. Erythematous popular rash which may coalesce as they spread
   3. As rash appears fever may spike higher

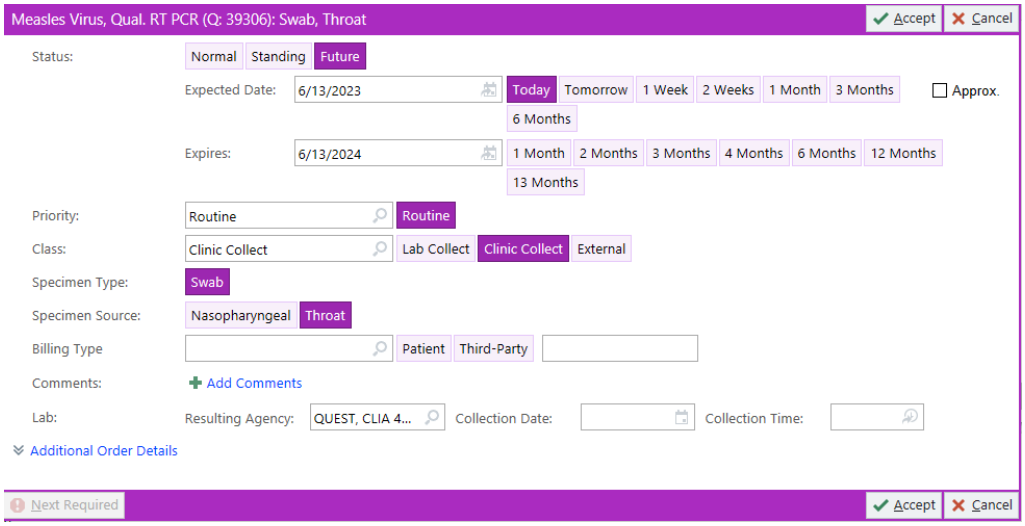
b. Complications of Measles
   i. Ear Infections
      1. 1 out of every 10 children with measles
      2. Clinics should consider how safe evaluation for this can be accomplished
   ii. Pneumonia
      1. 1 out of every 20 children with measles
      2. Most common cause of death
   iii. Encephalitis
      1. 1 out of every 1,000 children with measles
      2. Can lead to convulsions, deafness or prolonged intellectual disability

IV. Measles testing consists of two specimens: **Throat Swab for PCR (REQUIRED availability at all CCHCS clinic sites)** and serum blood work if available at clinic site.

Consideration should be taken for staff considered high risk including immunocompromised or pregnant. Individuals without known Measles Titer status should not swab for measles.

1. **Throat Swab**- Measles RT PCR- REQUIRED

a. **Quest Testing Option Recommended** with posterior pharyngeal sample
   i. Order in Epic and send out to QUEST with reported turnaround in 2-3 days
   ii. Order Name- Measles Virus, Qual. RT PCR (Q:39306)
   iii. Resulting Agency- Quest



b. Collect throat swab with the Eswab or Viral Culture Media swab
   i. Acceptable swabs include:
      1. Polyester fiber tipped swabs – either Dacron or Rayon
      2. No cotton tipped or wooden shaft swabs that contain calcium alginate
   ii. Eswab examples:

Ordering information

Each ESwab contains 1 mL of liquid Amies and a flocked swab.
Orders can be placed via Quanum Lab Services Manager.

White cap (Routine)	Blue cap (Mini-tip)
#164115	#161558

iii. Viral Culture Media example:

iv. Collection Methods
    1. Pharyngeal swab preferred
    2. Swab posterior pharynx avoiding tonsils
    3. Nasopharyngeal swabs are also acceptable specimens for measles testing
v. Label viral media container with patient CSN label
    1. Confirm 2 patient identifiers at the time the label is adhered to sample.
vi. Refrigerate until picked up.
    1. If able to hand specimen directly to courier, send on ice if courier does not have a cold cooler.
    2. If placing specimen in Quest lab box for pick up, place specimen in pouch used for transporting refrigerated specimens. (Picture below)
    3. Confirm in AM specimen has been picked up by QUEST

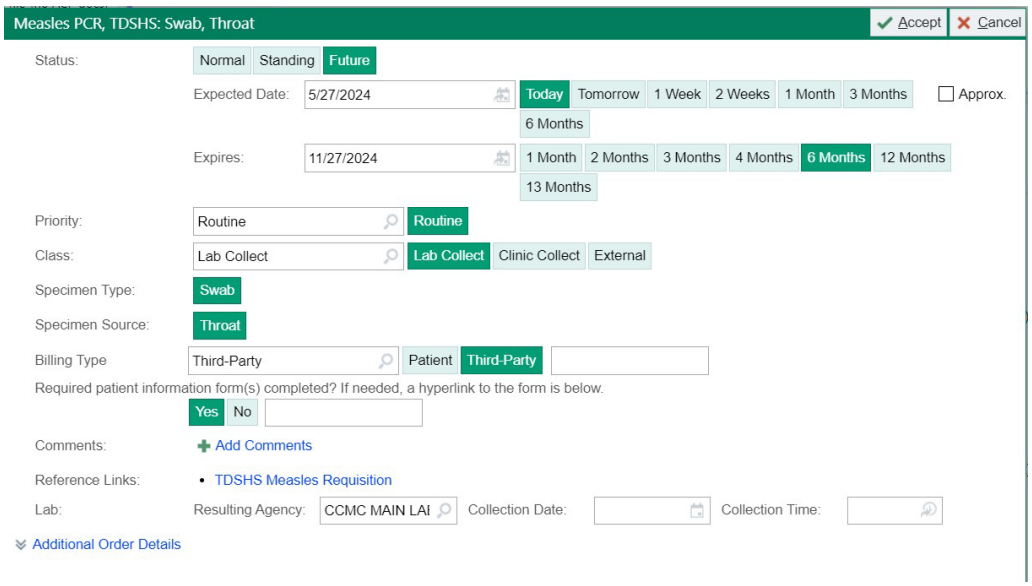
Quest Diagnostics

Refrigerated Process-
Cardio IQ Pouch

This refrigerated pouch is designed to keep specimens within stable refrigerated temperatures when in the lockbox. It was initially rolled out for Cardio IQ samples, but can be used for any Quest refrigerated samples.

c. Texas Health Department Testing also available

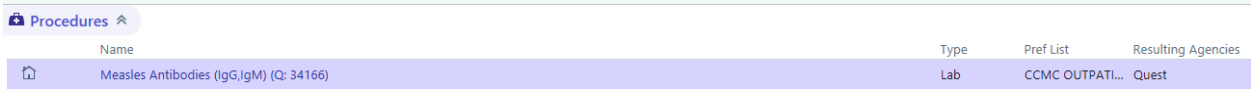
i. This workflow utilized by Emergency Department and CCMC/Dodson based clinics
ii. Off campus CCPN locations must have account for processing samples through state lab to utilize this workflow
iii. Sample collected with swabs as outlined above
iv. Order in EPIC and send to TDSHS with reported turnaround time of 1-2 days
v. Order name - Measles PCR, TDSHS
vi. Resulting agency CCMC Laboratory

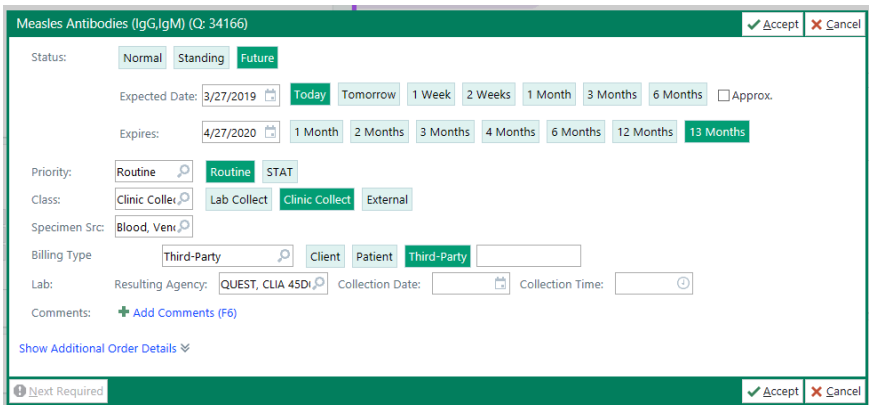


vii. Testing protocol as outlined here: [Measles PCR Specimen collection_.pdf (texas.gov)]
viii. Samples must be shipped to Health Department
ix. Can only shipped Monday through Thursday
x. Friday through Sunday samples should be sent to QUEST due to inability to store sample over weekend
xi. All samples at CCMC to be processed by CCMC lab and sent to Health Department

2. **Serum**- IgG, IgM- Recommended if clinic has ability to draw blood. ***If blood draw not available at clinic site do not send to other CCHCS location. PCR alone is acceptable first step.***

a. Order in EPIC
i. Order Name- Measles Antibody (IgG, IgM) (Q:34166)
ii. Resulting Agency- Quest





b. Draw at least 1mL in a red top tube

V. Isolation and Safety Requirements for Clinics

a. Room Isolation of patient and caregivers
    i. Patient should be placed in optimal room which best isolates away from others within clinic space. Clinics should individually determine this space.
    ii. Patient and caregivers should wear mask at ALL TIMES within clinic
    iii. Patient and caregivers should remain in room with door closed
    iv. If need arises for bathroom, patient should be provided with hat and supplies for use within exam room to minimize risk to other patients
b. PPE should include the follow for any staff or providers in contact with suspected case
    i. N 95 mask should be worn with surgical mask overlay
    ii. Eye protection such as goggles or eye shield
    iii. Gown and gloves
c. Clinics should gather names of other patients and staff within the clinic who may have been exposed for future notification if needed.
d. To exit patient safely, clear hallways and/or waiting room to safely exit- without any patient contact
e. Contact Infection Control at CCHCS – Sharon Holmes – 682-885-4000 and notify of potential case
f. Contact CCPN Clinical Operations Robin Henson – 682-885-6800 and notify of potential case
g. Contact Occupational Health – 682-885-4000
h. Submit event report for system level notification if test results positive

VI. Room Cleaning Requirements
a. After patient leaves room closed for 2 hours
b. Staff may then clean room in PPE N95, gown, gloves

VII. Management of Exposed with Post Exposure Prophylaxis (PEP) **FULL REDBOOK PEP GUIDELINE IN APPENDIX A**

a. All persons exposed must be notified regardless of immunization history
b. People exposed to measles who cannot readily show immunity to measles should be offered post exposure prophylaxis. Either offer MMR vaccine within 72 hours or immunoglobulin within 6 days. Do not administer both vaccine and immunoglobulin at the same time as invalidates vaccine.
c. Post exposure Prophylaxis for Immunocompromised
    i. Needs IM Immunoglobulin if less than 6 days from initial exposure
    ii. Contact Infectious Disease for Urgent Referral

d. Post Exposure Prophylaxis for Pregnant patients
    i. Patient should contact primary care provider for guidance
    ii. If employee, staff should contact occupational health
    iii. Consult Infectious Disease if guidance needed

VIII. Management of results
a. Negative results
    i. Notify patient
    ii. If both PCR and labs completed and both negative workflow completed
    iii. If only PCR completed send to lab at this time for serum IgG and IgM testing for confirmation – clarify with health department
b. Positive results
    i. Clinic to call and notify all patients once results available
    ii. Clinic to notify health department – SEE APPENDIX B
    iii. Clinic to follow up phone call with portal message of positive results
    iv. Provide families with Quarantine or Isolation at Home education – SEE APPENDIX A available at the Patient Education Portal and in the Epic Education Activity (inpatient).
c. Management of potential exposures
    i. Notify Health Department to manage contact tracing – while it is the health department's job to perform contact tracing and notify exposures, clinics should attempt to identify any patients lacking immunization which may need to be quickly seen in clinic for prophylaxis. Adult exposed individuals should contact their own health providers. SEE APPENDIX B
    ii. Clinic has the option to notify all potential exposed via phone call
    iii. Clinic can consider follow up phone call with portal message
    iv. Provide families with Quarantine or Isolation at Home education – SEE APPENDIX A available at the Patient Education Portal and in the Epic Education Activity (inpatient).

IX. Referral process for Emergency Department Evaluation
a. If higher level of patient care needed, referral to ED can be done
b. Emergency services can also be activated with notification of team of suspected measles
c. Referral to ED or UCC should NOT be done simply for testing
d. Safe referral process needed:
    i. Phone Emergency Department and notify that sending suspected measles (Call Transfer Center to ensure proper notification of ED charge nurse and Transport Physician)
    ii. Phone numbers:
        1. Fort Worth CCMC ED: 682-885-4100
        2. Prosper ED: 945-204-4407
    iii. Provide masks to patient and all caregivers and advise to wear at ALL TIMES when entering emergency department
    iv. Provide clear instructions to family to call ED upon arrival and enter through Ambulance Bay and NOT the Main Entrance
    v. Patient to be escorted to negative air pressure room by emergency department staff minimizing any exposure to other ED patients

Appendix A: REDBOOK Post Exposure Prophylaxis

Post-exposure prophylaxis (PEP) for measles exposures who are NOT pregnant or immunocompromised

Age range	Measles immune status[a]	PEP type depending on time after initial exposure		
		≤3 days (≤72 hours)	4-6 days	>6 days
All ages	Immune *(IgG positive, 2 MMR vaccine doses, or born before 1957[b])*	• PEP not indicated. Exposed person has documented immunity		
<6 months	Non-immune *(due to age)*	• Give intramuscular immunoglobulin (IMIG)[cd] • Home quarantine[e] for 28 days after last exposure		• PEP not indicated (too late)[f] • Home quarantine[e] for 21 days after last exposure
6-11 months	Non-immune *(due to age)*	• Give MMR vaccine *(MMR vaccine preferred over IG)* • No quarantine needed	• Give intramuscular immunoglobulin (IMIG)[cd] • Home quarantine[e] for 28 days after last exposure	• PEP not indicated (too late)[f] • Home quarantine[e] for 21 days last after exposure
≥12 months	Non-immune *(0 doses MMR vaccine or IgG negative)*	• Give MMR vaccine. • No quarantine needed[b]	• PEP not indicated (too late)[f] • Home quarantine[e] for 21 days after last exposure, then give MMR vaccine to protect from future exposures	
≥12 months	1 dose of MMR vaccine[b]	• Give 2nd MMR vaccine dose if ≥28 days from last dose of live vaccine • No quarantine needed	Household member of a confirmed/suspected case • Obtain IgG titers to determine immunity. Home quarantine[e] while awaiting results; if IgG negative, quarantine for 21 days after last exposure (too late for PEP)[f]	
			Not a household member of a confirmed/suspected case • Age 1-3 years: Less likely to get sick because has 1 dose of MMR • Age ≥4 years: Less likely to get sick because has 1 dose of MMR, and give 2nd MMR to protect from future exposures	
Adults	Unknown measles immune status	• Give MMR vaccine. • No quarantine needed[b]	Household member of a confirmed/suspected case • Obtain IgG titers to determine immunity. Home quarantine[e] while awaiting results; if IgG negative, quarantine for 21 days after last exposure (too late for PEP)[f]	
			Not a household member of a confirmed/suspected case Does contact work in setting with children (daycare/school) or healthcare facility • Yes: Obtain titers to determine immunity. Home quarantine[e] while awaiting results; if IgG negative, quarantine for 21 days after last exposure (too late for PEP)[f] • No: Contact can reach out to their own provider to obtain measles IgG titers[f]	

[a] All persons exposed to measles must be notified of their exposure, regardless of their evidence of immunity to measles.

[b] Birth before 1957 or 1 dose of MMR should not be considered sufficient for household members of confirmed measles cases or healthcare workers exposed to measles; without documented positive measles IgG titers or 2 MMR doses, consider them to have unknown immunity. Furlough non-immune healthcare workers for 21 days even if they get MMR PEP.

[c] For patients who receive IG, provide these instructions: www1.nyc.gov/assets/doh/downloads/pdf/imm/stay-home-non-cases.pdf

[d] Dosing of intramuscular IG for infants aged <12 months is 0.5 mL/kg of body weight (max dose 15mL). Administration of MMR or varicella vaccines must be delayed by 6 months after administration of intramuscular IG and by 8 months after intravenous IG.

[e] When instructing home quarantine, ensure that all household members of the exposed individual are immune to measles. IG prolongs the incubation period to 28 days.

[f] For patients who do not receive PEP, provide these instructions: www1.nyc.gov/assets/doh/downloads/pdf/imm/stay-home-cases.pdf

Appendix A: REDBOOK Post Exposure Prophylaxis

Post-exposure prophylaxis (PEP) for measles exposures who ARE pregnant or immunocompromised

BOI Script Category	Age range	Measles immune status[a]	PEP type depending on time after initial exposure		
			≤3 days (≤72 hours)	4-6 days	>6 days
Severely Immuno-compromised[b]	<12 months	Will need IG regardless of measles immune status	• Give intramuscular immunoglobulin (IMIG)[cd] • Home quarantine[e] for 28 days after last exposure		• PEP not indicated (too late)[f] • Home quarantine[e] for 21 days after last exposure
	≥12 months		• Give intravenous immunoglobulin (IVIG)[cd] • Home quarantine[e] for 28 days after last exposure		
Pregnant	n/a	Immune *(IgG positive or 2 MMR vaccine doses)*	• PEP not indicated[f]		
		Non-immune *(IgG negative)*	• Give intravenous immunoglobulin (IVIG)[cd] • Home quarantine[e] for 28 days after last exposure		• PEP not indicated (too late)[f] • Home quarantine[e] for 21 days after last exposure
		Unknown immunity	• Draw titers (measles IgG) STAT to determine immunity; proceed as above based on titer results		• PEP not indicated (too late)[f] • Home quarantine[e] for 21 days after last exposure

[a] All persons exposed to measles must be notified of their exposure, regardless of their evidence of immunity to measles.

[b] Management of immunocompromised persons can be challenging and may require individualized decisions with provider based on immunocompromising condition or medications.

Severely immunocompromising conditions (per ACIP and IDSA)* include:

- Severe primary immunodeficiency;
- Bone marrow transplant until ≥12 months after finishing all immunosuppressive treatment, and maybe longer in patients who have developed graft-versus-host disease;
- On treatment for acute lymphoblastic leukemia (ALL) within and until ≥6 months after completion of immunosuppressive chemotherapy;
- On cancer chemotherapy**
- Post solid organ transplantation**
- Receiving daily corticosteroid therapy with a dose ≥20mg (or >2 mg/kg/day for patients who weigh <10kg) of prednisone or equivalent for ≥14 days
- Receiving certain biologic immune modulators, such as tumor necrosis factor-alpha (TNF-α) blockers or rituximab**
- After hematopoetic stem cell transplant, duration of high-level immunosuppression is highly variable and depends on type of transplant (longer for allogenic than autologous), type of donor and stem cell source, and post-transplant complications such as graft vs. host disease and their treatments**
- AIDS or HIV with severe immunosuppression defined as CD4 <15% (all ages) or CD4 count <200 lymphocytes/mm^3 (aged >5 years).

Low-level immunosuppression: In the absence of published guidance on exposed persons with low-level immunosuppression, consider assessing presumptive immunity to measles (measles IgG positive or 2 MMR vaccine doses) to determine if PEP is indicated. If not immune to measles, give PEP as MMR (if not contraindicated[^] and within 72 hours of initial exposure). Consider intravenous IG[c] if MMR is contraindicated[^] or if it is too late for MMR (day 4-6 after initial exposure) with home quarantine for 28 days after last exposure. If no PEP is given because it is too late, home quarantine for 21 days after last exposure[e].

[c] For patients who receive IG, provide these instructions: www1.nyc.gov/assets/doh/downloads/pdf/imm/stay-home-non-cases.pdf

[d] Dosing of intramuscular IG for infants aged <12 months: 0.5 mL/kg of body weight (max dose 15mL). Dosing of intravenous IG for pregnant women not immune to measles and immunocompromised persons: 400 mg/kg. MMR or varicella vaccine administration must be delayed by 6 months and 8 months after intramuscular and intravenous IG, respectively.

[e] When implementing home quarantine, ensure that all household members of the exposed individual are immune to measles. IG prolongs the incubation period to 28 days.

[f] For patients who do not receive PEP, provide these instructions: www1.nyc.gov/assets/doh/downloads/pdf/imm/stay-home-cases.pdf

* References: CDC. Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013. MMWR. 2013:62(4);
Rubin et. al. 2013 IDSA Clinical Practice Guideline for Vaccination of the Immunocompromised Host. CID. 2014:58.

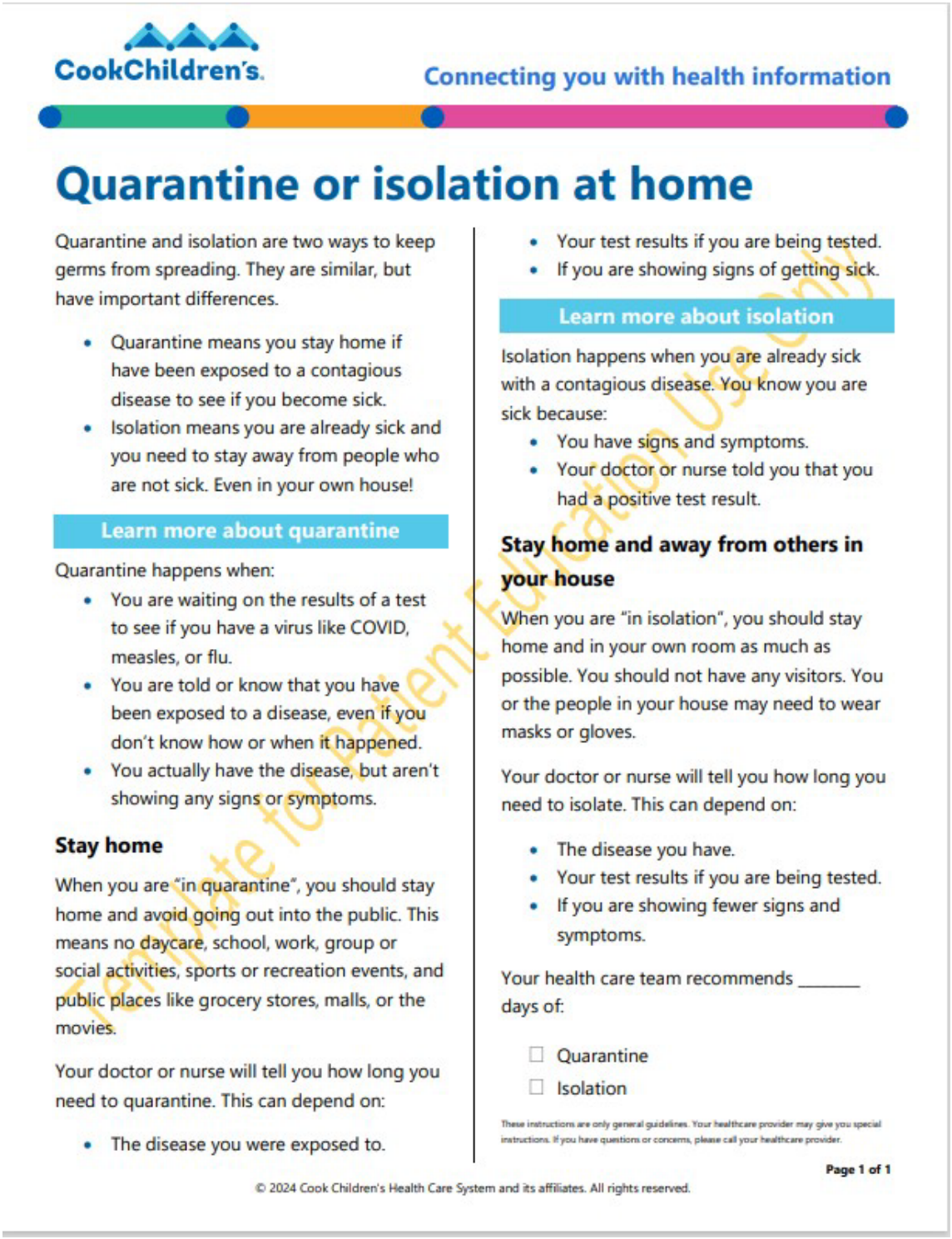
** Check guidance/discuss with treating provider as duration of immunosuppression during or following chemotherapy, transplants, or biologic immune modulators may vary.

Appendix B: Health Department Contact Information

Tarrant County Public Health (Region 3)		Collin County (Region 3)		Denton County (Region 3)	
Tarrant County Public Health Department 1101 S. Main Street Fort Worth, Texas 76014		Collin County Health Care Services 825 N McDonald St. McKinney, TX 75069		Denton County Health Department 535 S. Loop 288 Denton, TX 76205	
Day Phone:	817-321-5350	Day Phone:	972-548-4707	Day Phone:	940-349-2909
After Hours:	817-994-3708	After Hours:	972-547-5350	After Hours:	940-349-2909
Fax:	817-850-2366	Fax:	972-548-4436	Fax:	940-349-5078
Abilene - Taylor County (Region 2)		Public Health Administrative Region 2/3 Stephenville - Erath County Granbury - Hood County Weatherford - Parker County		Wichita Falls - Wichita County (Region 2)	
Abilene Taylor-County Public Health District 850 N 6th St. Abilene, TX 79601		Public Health Region 2/3 1301 South Bowen Road Arlington, TX 76013		Wichita Falls-Wichita County Public Health District 1700 Third Street Wichita Falls, TX 76301	
Day Phone:	325-721-8285	Day Phone:	817-264-4541	Day Phone:	940-761-7800
After Hours:	325-721-8285	After Hours:	817-822-6786	After Hours:	940-761-7800
Fax:	325-676-6358	Fax:	817-264-4557	Fax:	940-761-7659
McLennan County (Region 7)		Lubbock County (Region 1)		Midland County (Region 9)	
Waco-McLennan County Public Health District 225 West Waco Drive Waco, TX 76707		Lubbock Health Depatment 806 18th St. Lubbock, TX 79401		Midland Health Department 3303 W Illinois Space 22 Midland, TX 79703	
Day Phone:	254-750-5450	Day Phone:	806-775-2933	Day Phone:	432-681-7631
After Hours:	254-750-5411	After Hours:	806-775-2935	After Hours:	888-936-7111
Fax:	254-750-5452	Fax:	806-775-3184	Fax:	432-699-6290
Public Health Administrative Region 7 Burleson - Burleson County		Potter County (Region 1)		San Angelo - Tom Green County (Region 9)	
Public Health Region 7 2408 South 37th Street Temple,TX 76504		Amarillo Public Health 1000 Martin Road Amarillo, Texas 79107		San Angelo - Tom Green County Health Department 72 W. College San Angelo, TX 76903	
Day Phone:	254-771-6729	Day Phone:	806-378-6341	Day Phone:	325-657-4214
After Hours:	254-228-6047	After Hours:	806-680-8980	After Hours:	325-657-4493
Fax:	254-899-0405	Fax:	806-378-6306	Fax:	325-481-2634

Appendix C: Quarantine or Isolation at home Caregiver Handout

Available at the Patient Education Portal and in the Epic Education Activity (inpatient).



CookChildren's

Connecting you with health information

Quarantine or isolation at home

Quarantine and isolation are two ways to keep germs from spreading. They are similar, but have important differences.

- Quarantine means you stay home if have been exposed to a contagious disease to see if you become sick.
- Isolation means you are already sick and you need to stay away from people who are not sick. Even in your own house!

Learn more about quarantine

Quarantine happens when:

- You are waiting on the results of a test to see if you have a virus like COVID, measles, or flu.
- You are told or know that you have been exposed to a disease, even if you don't know how or when it happened.
- You actually have the disease, but aren't showing any signs or symptoms.

Stay home

When you are "in quarantine", you should stay home and avoid going out into the public. This means no daycare, school, work, group or social activities, sports or recreation events, and public places like grocery stores, malls, or the movies.

Your doctor or nurse will tell you how long you need to quarantine. This can depend on:

- The disease you were exposed to.
- Your test results if you are being tested.
- If you are showing signs of getting sick.

Learn more about isolation

Isolation happens when you are already sick with a contagious disease. You know you are sick because:

- You have signs and symptoms.
- Your doctor or nurse told you that you had a positive test result.

Stay home and away from others in your house

When you are "in isolation", you should stay home and in your own room as much as possible. You should not have any visitors. You or the people in your house may need to wear masks or gloves.

Your doctor or nurse will tell you how long you need to isolate. This can depend on:

- The disease you have.
- Your test results if you are being tested.
- If you are showing fewer signs and symptoms.

Your health care team recommends _____ days of:

- ☐ Quarantine
- ☐ Isolation

These instructions are only general guidelines. Your healthcare provider may give you special instructions. If you have questions or concerns, please call your healthcare provider.

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References

Centers for Disease Control (2020) *Measles (Rubeola)* Retrieved from: Measles (Rubeola) | CDC

Texas Health and Human Services (2024) *Measles (Rubeola)* Retrieved from: Measles (Rubeola) | Texas DSHS

American Academy of Pediatrics (2021) *Redbook: Chapter Measles* Retrieved from: Measles | Red Book: 2021–2024 Report of the Committee on Infectious Diseases | Red Book Online | American Academy of Pediatrics (aap.org)